

Claims

WHAT IS CLAIMED IS:

1 1. A system, comprising:

2 a computer for:

3 according to a first model of an operation of circuitry, generating a first set of
4 estimates of the operation in response to a set of conditions, including a first estimate of
5 the operation in response to a first condition;

6 according to a second model of the operation, generating a second set of estimates
7 of the operation in response to the first condition and the first set;

8 in response to a comparison between the first estimate and the second set,
9 selecting a subset of the first set; and

10 according to the second model, generating an estimate of the operation in
11 response to a second condition and the selected subset.

1 2. The system of Claim 1 wherein the first model includes a circuit simulator.

1 3. The system of Claim 1 wherein the second model includes a characteristic equation.

1 4. The system of Claim 3 wherein the second model includes a characterization table that
2 includes the characteristic equation.

1 5. The system of Claim 3 wherein the second model is a static timing analysis model
2 including the characteristic equation.

1 6. The system of Claim 3 wherein the computer is for generating the second set by:
2 determining respective sets of constant elements of the characteristic equation in response
3 to subsets of the first set; and
4 according to the characteristic equation, in response to the first condition, generating the
5 second set including respective estimates of the operation in response to the sets of constant
6 elements.

1 7. The system of Claim 6 wherein the computer is for selecting the selected subset from
2 among the subsets of the first set in response to the comparison, the comparison being a
3 comparison between the first estimate and the estimates of the second set.

1 8. The system of Claim 7 wherein:
2 the subsets of the first set are respectively associated with the sets of constant elements,
3 so the selected subset of the first set is associated with a particular set of constant elements;
4 the estimates of the second set are respectively associated with the sets of constant
5 elements, so a particular estimate of the second set is associated with the particular set of
6 constant elements; and
7 among the estimates of the second set, the particular estimate is closest to the first
8 estimate.

1 9. The system of Claim 1 wherein the operation is a response time of the circuitry.

1 10. The system of Claim 1 wherein the operation is a propagation delay of the circuitry.

1 11. The system of Claim 1 wherein the conditions include at least two types of
2 conditions.

1 12. The system of Claim 1 wherein the conditions include at least three types of
2 conditions.

1 13. The system of Claim 1 wherein the conditions include capacitive loadings of the
2 circuitry.

1 14. The system of Claim 1 wherein the conditions include input transition times of the
2 circuitry.

1 15. The system of Claim 14 wherein the conditions include at least two types of input
2 transition times of the circuitry.

1 16. The system of Claim 1 wherein the circuitry is integrated circuitry.

1 17. A method, comprising:
2 with a first computer-implemented model of an operation of circuitry, generating a first
3 set of estimates of the operation in response to a set of conditions, including a first estimate of
4 the operation in response to a first condition;
5 with a second computer-implemented model of the operation, generating a second set of
6 estimates of the operation in response to the first condition and the first set;
7 in response to a comparison between the first estimate and the second set, selecting a
8 subset of the first set; and
9 with the second computer-implemented model, generating an estimate of the operation in
10 response to a second condition and the selected subset.

1 18. The method of Claim 17 wherein the generating of the first set of estimates
2 comprises:
3 with the first computer-implemented model of the operation, generating the first set of
4 estimates of the operation in response to the set of conditions, the first computer-implemented
5 model including a circuit simulator.

1 19. The method of Claim 17 wherein the generating of the second set of estimates
2 comprises:
3 with the second computer-implemented model of the operation, generating the second set
4 of estimates, the second computer-implemented model including a characteristic equation.

1 20. The method of Claim 20 wherein the generating of the second set of estimates
2 comprises:
3 with the second computer-implemented model of the operation, generating the second set
4 of estimates, the second computer-implemented model including a characterization table that
5 includes the characteristic equation.

09963333.09601

1 25. The method of Claim 17 wherein the generating of the first set of estimates
2 comprises:
3 with the first computer-implemented model of the operation, generating the first set of
4 estimates of the operation in response to the set of conditions, the operation being a response
5 time of the circuitry.

1 26. The method of Claim 17 wherein the generating of the first set of estimates
2 comprises:
3 with the first computer-implemented model of the operation, generating the first set of
4 estimates of the operation in response to the set of conditions, the operation being a propagation
5 delay of the circuitry.

1 27. The method of Claim 17 wherein the generating of the first set of estimates
2 comprises:
3 with the first computer-implemented model of the operation, generating the first set of
4 estimates of the operation in response to the set of conditions, the conditions including at least
5 two types of conditions.

1 28. The method of Claim 17 wherein the generating of the first set of estimates
2 comprises:
3 with the first computer-implemented model of the operation, generating the first set of
4 estimates of the operation in response to the set of conditions, the conditions including at least
5 three types of conditions.

1 29. The method of Claim 17 wherein the generating of the first set of estimates
2 comprises:
3 with the first computer-implemented model of the operation, generating the first set of
4 estimates of the operation in response to the set of conditions, the conditions including capacitive
5 loadings of the circuitry.

1 30. The method of Claim 17 wherein the generating of the first set of estimates
2 comprises:
3 with the first computer-implemented model of the operation, generating the first set of
4 estimates of the operation in response to the set of conditions, the conditions including input
5 transition times of the circuitry.

1 31. The method of Claim 30 wherein the generating of the first set of estimates
2 comprises:
3 with the first computer-implemented model of the operation, generating the first set of
4 estimates of the operation in response to the set of conditions, the conditions including at least
5 two types of input transition times of the circuitry.

1 32. The method of Claim 17 wherein the generating of the first set of estimates
2 comprises:
3 with the first computer-implemented model of the operation, generating the first set of
4 estimates of the operation in response to the set of conditions, the circuitry being integrated
5 circuitry.

1 33. A computer program product, comprising:
2 a computer application processable by a computer for causing the computer to:
3 according to a first model of an operation of circuitry, generate a first set
4 of estimates of the operation in response to a set of conditions, including a first
5 estimate of the operation in response to a first condition;
6 according to a second model of the operation, generate a second set of
7 estimates of the operation in response to the first condition and the first set;
8 in response to a comparison between the first estimate and the second set,
9 select a subset of the first set; and
10 according to the second model, generate an estimate of the operation in
11 response to a second condition and the selected subset; and
12 apparatus from which the computer application is accessible by the computer.

1 34. The computer program product of Claim 33 wherein the first model includes a circuit
2 simulator.

1 35. The computer program product of Claim 33 wherein the second model includes a
2 characteristic equation.

1 36. The computer program product of Claim 35 wherein the second model includes a
2 characterization table that includes the characteristic equation.

1 37. The computer program product of Claim 35 wherein the second model is a static
2 timing analysis model including the characteristic equation.

1 38. The computer program product of Claim 35 wherein the computer application is
2 processable by the computer for causing the computer to generate the second set by:
3 determining respective sets of constant elements of the characteristic equation in response
4 to subsets of the first set; and
5 according to the characteristic equation, in response to the first condition, generating the
6 second set including respective estimates of the operation in response to the sets of constant
7 elements.

1 39. The computer program product of Claim 38 wherein the computer application is
2 processable by the computer for causing the computer to select the selected subset from among
3 the subsets of the first set in response to the comparison, the comparison being a comparison
4 between the first estimate and the estimates of the second set.

1 40. The computer program product of Claim 39 wherein:
2 the subsets of the first set are respectively associated with the sets of constant elements,
3 so the selected subset of the first set is associated with a particular set of constant elements;
4 the estimates of the second set are respectively associated with the sets of constant
5 elements, so a particular estimate of the second set is associated with the particular set of
6 constant elements; and
7 among the estimates of the second set, the particular estimate is closest to the first
8 estimate.

1 41. The computer program product of Claim 33 wherein the operation is a response time
2 of the circuitry.

1 42. The computer program product of Claim 33 wherein the operation is a propagation
2 delay of the circuitry.

1 43. The computer program product of Claim 33 wherein the conditions include at least
2 two types of conditions.

1 44. The computer program product of Claim 33 wherein the conditions include at least
2 three types of conditions.

1 45. The computer program product of Claim 33 wherein the conditions include
2 capacitive loadings of the circuitry.

1 46. The computer program product of Claim 33 wherein the conditions include input
2 transition times of the circuitry.

1 47. The computer program product of Claim 46 wherein the conditions include at least
2 two types of input transition times of the circuitry.

1 48. The computer program product of Claim 33 wherein the circuitry is integrated
2 circuitry.